ABSTRACT

A system and process of bio-treatment for enhancing the efficiency of treating waste gas is disclosed. This technology relates to an application of a dust/grease filtering device, a two-way directionally gas inlet system, a bioaerosol removal device, and a cell immobilization technology, to a conventional bioreactor for treating waste gas. The dust/grease filtering device is formed by fillers which form pores being less than 100 mesh, in order to efficiently remove the majority of dust/grease existing in the waste gas, and reduce the pressure drop of the reactor. The two-way directionally gas inlet system can control the direction of the gas flowing into the bioreactor, in order to efficiently control the pressure drop, and the variation of pH value and the humidity in the reactor. The cell immobilized technology makes a connection between support and microorganisms offering the biological reaction, in order to enhance the activity and living percentage of the microorganisms in the biotrickling filter, and reduce the emission of the bioaerosol. The bioaerosol removal device is filled with the fillers having the function of sterilization. After the waste gas is treated and before it is exhausted to the environment, the filler may remove the bioaerosol existing therein, thereby improving the safety and widening the application field of the waste gas bio-treatment system.